

RECOMMENDATIONS FOR FURTHER ACTION

Date: June 9, 1988

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Site: General Instrument Corporation
(aka Quality Technologies Corporation)
3400 Hillview Avenue
Palo Alto, CA

EPA ID No.: CAD095984167

ASPIS No.: 43-36

1. Initial DHS Conclusions and Recommendations for Further Action:

a) Site Description:

Quality Technologies Corporation (QTC), formerly owned and operated by General Instruments Corporation (GIC) is located at 3400 Hillview Avenue in Palo Alto, California (Figure 1). GIC operated an opto-electronics manufacturing plant, and had been the occupants since 1980 [2]. Other occupants prior to GIC were SmithKline and French Laboratories (Smith-Kline), a manufacturer of medical electronic equipment which occupied the building on November 1, 1966, and Monsanto Company, manufacturer of light emitting diode which occupied the building on May 16, 1973 [2].

The QTC property is surrounded by other manufacturing and industrial research facilities [1]. To the south of the site lies a Xerox facility, to the east a Syntex facility and to the north Watkins-Johnson, Inc., Schlumberger, Inc., and the University Club [1]. Hewlett-Packard's Deer Creek Facility lies approximately 1/2 mile upstream of the site to the northwest [1]. Agricultural land (pastures) are adjacent to the site on the west [1].

The site is located at the foothills of the Santa Cruz mountains (in the Santa Clara Valley) at an elevation of approximately 280 feet above Mean Sea Level [1]. The regional surface elevation slopes toward the southern portion of San Francisco Bay to the northeast [1] Matadero Creek and its tributaries comprise the natural surface water drainage system [1].

Apparent Problem:

The Regional Water Quality Control Board (RWQCB) requested a Chemical Use History Report from GIC on November 11, 1987. Copies of "Initial Site Investigation Report, General Instrument Corporation, Palo Alto Facility" were submitted to the RWQCB and DHS. The RWQCB is no longer involved in this site. DHS is the "Lead Agency."

In August 1987, GIC contracted with consultants to perform a site evaluation in conjunction with the sale of the property [1]. Results of this initial evaluation indicated that ground water under the site has been contaminated by volatile organic compounds (VOCs) including trichloroethylene (TCE) and tetrachloroethylene (PCE) [1].

During the Smith-Kline lease term, blueprints dated 1966-1968 show two acid-waste trenches underneath the first floor, apparently leading to an acid waste sump which is located in the utility pad [2]. A TCE storage tank and TCE distribution lines are shown on the plumbing plans for the first floor [2]. The plans indicate that the TCE tank was located on the ground level of the first floor and the TCE distribution lines were attached to the ceiling [2]. The blueprints also indicate that activities on the first floor included photo engraving and chemical testing [2].

During the Monsanto Lease Term, blueprints dated 1973, show the same acid-waste trench, drain and sump layout that was built for Smith-Kline [2]. The acid waste treatment sump was replaced by GIC in 1979 [2].

Presently, the GIC facility has two underground 9,600 gallon diesel fuel storage tanks with fuel leak detection equipment, an above-ground 10,000 gallon liquid hydrogen tank, an acid waste sump located in the service yard area and a water treatment system located in the basement of Building B [2].

Effluent from manufacturing processes is treated in a waste water treatment unit for removal of arsenic and gallium, and for pH adjustment [2]. It is also put through a series of

chemical treatments including flocculation, clarification, and sludge thickening [2]. Effluent from the waste water treatment system is routed to an acid waste sump in the service area where it is neutralized before discharge to the sanitary sewer [2]. The GIC facility construction or modifications are shown on the blueprint sheets.

Drums are used for containing chemicals and are disposed by hauling them to approved dump sites or to the reclaimer [2].

b) HRS Factors:

Observed Release:

There has been a documented observed release to ground water beneath the GIC site, but there is no documented evidence that the contaminants came from the GIC facility.

TCE and PCE have been detected at concentration up to 10.0 ppm and 0.31 ppm, respectively in ground water beneath the site. Test results indicate that higher concentration of TCE and PCE in ground water are present downgradient of the facility as compared to upgradient concentration [1]. See text below for details.

Those VOCs that were present in detectable concentrations and are summarized in Table 2. The spatial distribution of selected VOCs in the monitoring wells are shown on Figure 11.

TCE and PCE were found in the highest concentrations of the reported VOCs [1]. Detectable concentrations of TCE were found in wells LF-1, LF-2, LF-3, and LF-5 and ranged from 0.007 ppm in LF-5 (September) to 10 ppm (August) in LF-2 (7.8 ppm to 10 ppm) and LF-3 (0.76 and 1.2 ppm) [1]. PCE was only found in detectable concentration in two wells, LF-2 and LF-3, with the highest concentrations in LF-3. PCE concentration in this well were 0.310 and 0.390 ppm for the August and September analysis results respectively [1]. PCE concentrations in LF-2 were above detection limits at 0.004 and 0.002 ppm for August and September respectively [1].

The ground water was also analyzed for priority pollutant metals (Wells LF-1 through LF-5). The only metals that exceeded detection limits were copper, lead, arsenic, and selenium (Table 3).

A total of five soil samples at depths of 5 to 14 feet were tested for gallium, priority pollutant metals, volatile organic compounds (VOCs) and total petroleum hydrocarbons

(TPH) [1]. The results of these analyses are summarized on Table 1. All VOCs were below detection limits with the exception of TCE, methylene chloride and toluene which were each less than 1 ppm.

Soil gas samples were collected from 32 sampling locations, see Figure 2 [1]. VOC analytes for this soil gas survey included: Freon 113, total Freon, 1,1-dichloroethylene (1,1-DCE), 1,1,1-trichlorethane (1,1,1-TCA), trichloroethylene (TCE), perchlorethylene (PCE), benzene, toluene, total xylene and total volatile hydrocarbons (TH) excluding methane [1]. Reported VOC concentrations ranged from non-detectable to 200 ug/l in the soil gas for all analytes except total freon, which ranged from non-detectable to 620,000 ug/l [2]. The survey results are presented as soil gas concentration maps in Figures 3-10. Soil gas concentration for total xylenes in soil gas were below detection limits for all samples and are not presented in a figure [1]. Soil gas samples analysis were submitted by Tracer Research Corporation [1].

On August 21, 1987, water samples were taken from monitoring wells LF-1 through LF-5 and analyzed for VOCs by EPA Method 624, TPH, gallium and priority metals at Brown and Caldwell Laboratory [1]. Between 15 and 17 September 1987, a second round of water samples were taken from monitoring wells LF-1 through LF-7 [1]. Samples from this round were analyzed for VOCs by EPA Method 601 by Med-Tox Laboratories [1].

Direct Contact/Fire and Explosion:

Most of the area at the site is covered with asphalt, therefore, preventing direct contact with any soils which maybe contaminated soils. The property is not fenced, and it has two roads of entry to the facility [13].

According to the Palo Alto Fire Department, there have been three fires at GIC [3]. The dates and causes of fires are not available at this time.

Waste Type/Waste Quantity:

Some of the chemicals which have been used at GIC are xylene, acetone, freon 113, TCA and TCE [2]. The amounts and dates used are listed on Table 4. The types and quantities of hazardous materials that have been generated at GIC are listed on Tables 4b, 4c, respectively. The chemicals used during the Monsanto term are listed on Table 5.

During the occupancy of Smith-Kline and Monsanto, TCE and PCE were used at the facility.

Ground Water:

The ground water elevation in the shallow zone (monitoring wells LF-1, LF-2, LF-3, LF-4, LF-5 and LF-7) ranged from 13.00 to 30 feet [1]. The shallow horizontal ground water flow under the site varies in directions from north-northeast in the eastern portion of the site to east-northeast in the western part of the site [1]. The depth to ground water in the deeper zone as measured in LF-2B and LF-7 vary between 50 and 95 feet below grade respectively [1].

There are 92 active ground water wells for domestic use, 45 inactive for domestic use, four active for Agriculture and Domestic (A&D), six inactive for A&D, and 45 active Municipal and Industrial (M&I), four inactive (M&I), one active for agriculture [4]. The approximate population served is 17,500 people [5].

The aquifers in the Santa Clara area are located south of San Francisco Bay, extending about 24 miles south to the drainage divide near Morgan Hill [6]. The lower and upper aquifers are interconnected within a three mile radius of the site [7]. The aquifers which supply Palo Alto municipal wells are screened from 100 to 600 feet [14].

The net precipitation is approximately 1.32 inches [8,9]. See Table 6 for sample calculation.

The soil beneath the site consists of silty sand to a depth of 9 feet, silty gravelly sand to a depth of 30 feet, gravel to a depth of 45 feet, and sandy silty clay to a depth of 70 feet [1].

Surface Water:

Matadero Creek and Barron Creek are the closest surface waters to the facility. Matadero Creek is approximately 400 feet from GIC, Barron Creek is approximately 3,800 feet from GIC. These creeks are used for recreation and discharge into the San Francisco Bay [10].

There is no potential for contaminants to contribute to surface runoff that may enter Matadero or Barron Creek.

The maximum rainfall in a 24-hour period is 4.4 inches [11].

Other Factors:

The population of the surrounding area within a 4 mile radius is approximately 119,136 people [12].

Conclusions and Recommendations:

There is documented evidence that ground water under the site has been contaminated by volatile organic compounds, including TCE and PCE. Records indicate that GIC, Smith-Kline and Monsanto, the former occupants, have used and/or stored these chemicals during operation.

DHS Recommendation:

Since this site is located within the Hillview-Porter area, DHS Bond Expenditure Plan Site area and site inspection data are already available. It is recommended that DHS complete a MITRE Model/Hazard Ranking System (HRS) ranking to, include the site in the Bond Expenditure Plan for further investigation and remediation.

EPA Recommendation:

Based on a HRS scoring of an adjacent site with the same contaminants, Watkins-Johnson, with score of 22.0, the site is medium priority for a CERCLA site inspection.

REFERENCES

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